

Claims

- [c1] 1.A one-piece tab assembly for attachment to a cathode cup of an X-ray imaging machine and surrounding a filament integrated within the cathode cup, the one-piece tab assembly comprising:
at least two rail portions extending substantially across the length of the one-piece tab assembly;
a first tab portion extending between said at least two rail portions; and
a second tab portion extending between said at least two rail portions;
wherein said first tab portion and said second tab portion each include:
a main body portion extending between said at least two rail portions, said main body portion intended to provide a mounting surface for attachment to said cathode cup; and
a flap portion extending from said main body portion, said flap portion for directing an electron beam emitted from said filament.
- [c2] 2.The one-piece tab assembly of claim 1 wherein said first tab portion and said second tab portion are located on opposing ends of said at least two rail portions.
- [c3] 3.The one-piece tab assembly of claim 2 wherein said at least two rails, said first tab, and said second tab define a central filament opening for permitting said electron beam to pass therethrough.
- [c4] 4.The one-piece tab assembly of claim 1 wherein said flap portion is positioned perpendicular to said at least two rail portions so as to locate said flap portion in a desired position relative to said filament.
- [c5] 5.The one-piece tab assembly of claim 1 wherein said flap portion includes at least two chamfered corners.
- [c6] 6.The one-piece tab assembly of claim 1 wherein the cathode tab assembly is comprised of a material selected from the group consisting of a molybdenum material, a nickel material, a tantalum material, a niobium material, and a hardened steel material.
- [c7] 7.The one-piece tab assembly of claim 1 wherein the cathode tab assembly is

attached to the cathode cup by at least one of a weld attachment, a rivet attachment, and a screw fastener attachment.

[c8] 8.A cathode assembly for an X-ray imaging machine, comprising:
a cathode cup having at least one filament recess for receiving at least one filament therein, said cathode cup further including at least two channels;
at least one one-piece tab assembly having at least two rail portions extending therefrom, said at least two rail portions extending substantially across the length of said at least one one-piece tab assembly, said at least two rail portions intended for insertion into said at least two channels and locating said at least one one-piece tab assembly in a desired position on said cathode cup.

[c9] 9.The cathode assembly of claim 8 wherein said at least one one-piece tab assembly further includes a first tab and a second tab both extending between said at least two rail portions.

[c10] 10.The cathode assembly of claim 9 wherein said first tab and said second tab each include a main body portion extending between said at least two rail portions, said main body portion intended to provide a mounting surface for attachment to said cathode cup.

[c11] 11.The cathode assembly of claim 10 wherein said first tab and said second tab each include a flap portion extending from said main body portion, said flap portion for directing an electron beam emitted from said at least one filament.

[c12] 12.The cathode assembly of claim 11 wherein said at least two rail portions, said first tab, and said second tab define a central filament opening for permitting an electron beam to pass therethrough.

[c13] 13.The one-piece tab assembly of claim 11 wherein said flap portion is positioned perpendicular to said at least two rail portions so as to locate said flap portion in a desired position relative to said filament.

[c14] 14.The one-piece tab assembly of claim 11 wherein said flap portion includes at least two chamfered corners.

[c15] 15.The one-piece tab assembly of claim 8 wherein said at least one cathode tab

assembly is comprised of a material selected from the group consisting of a molybdenum material, a nickel material, a tantalum material, a niobium material, and a hardened steel material.

[c16] 16.The one-piece tab assembly of claim 8 wherein said at least one cathode tab assembly is attached to said cathode cup by at least one of a weld attachment, a rivet attachment, and a screw fastener attachment.

[c17] 17.A method for manufacturing a cathode assembly comprising:
forming a central filament opening in a blank;
forming at least two rail portions extending from said blank;
forming at least two flap portions from said blank;
forming at least two main body portions; and
coupling said blank to a cathode cup

18.The method of claim 17 wherein coupling said blank to said cathode cup comprises inserting said at least two rail portions into at least two channels formed within said cathode cup.

[c18] 19.The method of claim 17 wherein said coupling said blank to said die comprises attaching at least two main body portions of said blank to said cathode cup.

[c19] 20.The method of claim 19 wherein said coupling said at least two main body portions to said cathode cup comprises welding said at least two main body portions to said cathode cup.